May 25, 1937. J. M. DINNEEN 2,081,798

BOTTLE SPRAY NOZZLE

Filed March 9, 1936

Fig. 1.

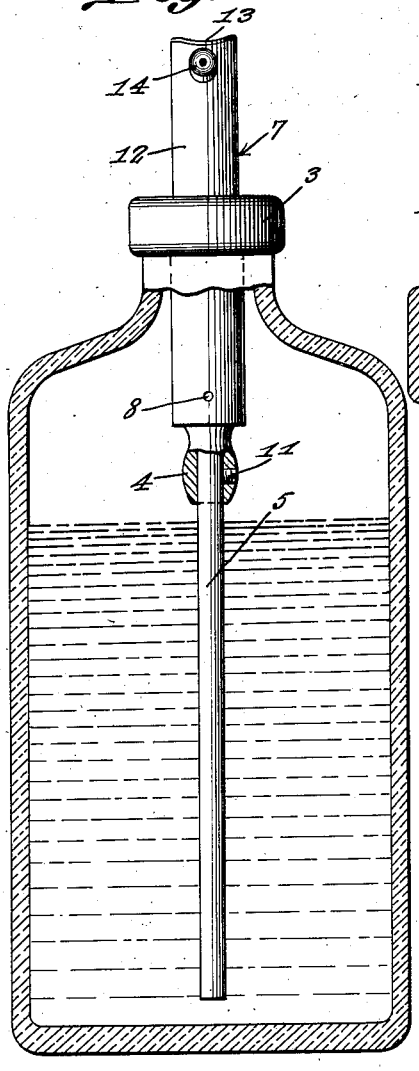


Fig. 2.

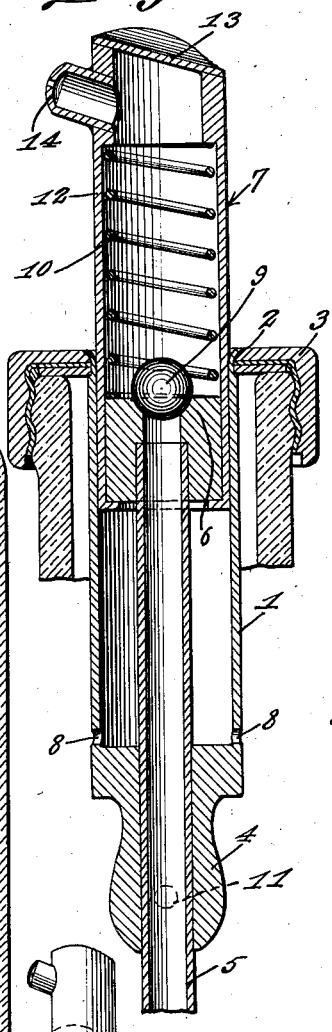


Fig. 3.

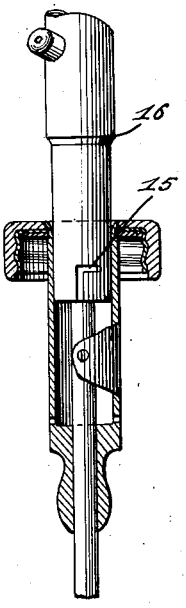


Fig. 4.

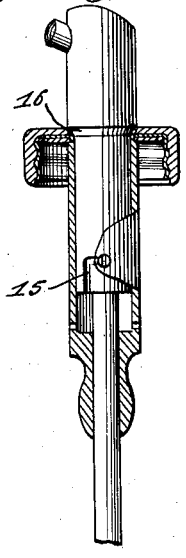
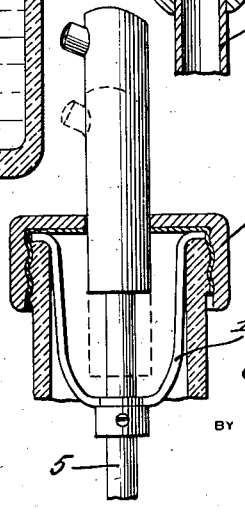


Fig. 5.



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BOTTLE SPRAY NOZZLE

Joseph M. Dinneen, Lowell, Mass.

Application March 9, 1936, Serial No. 67,976

2 Claims. (Cl. 299—97)

This invention relates to spray nozzles for dispensing the liquid contents of bottles and like containers and has for the primary object the provision of a device of this character which may be readily adapted to a bottle or like container and provides thereto a closure and when actuated with a reciprocatory movement will pump the contents from the bottle and dispense said contents in spray form.

With these and other objects in view, this invention consists in certain novel features of construction, combination and arrangement of parts to be hereinafter more fully described and claimed.

For a complete understanding of my invention, reference is to be had to the following description and accompanying drawing, in which

Figure 1 is a side elevation, partly in section, showing a spray nozzle adapted to a bottle.

Figure 2 is a fragmentary vertical sectional view drawn on an enlarged scale showing the mounting of the spray nozzle to the neck of a bottle.

Figure 3 is a fragmentary view, partly in section, showing the means of connecting the combined spray nozzle and pump piston to the cylinder.

Figure 4 is a view similar to Figure 3 showing the combined spray nozzle and piston secured in position for closing the interior of the bottle to the atmosphere.

Figure 5 is a fragmentary sectional view showing a modified form of my invention.

Referring in detail to the drawing, the numeral 1 indicates a cylinder having one end extending through and flared against the walls of an opening 2 of a closure cap 3. The cap 3 is adapted to be secured to a neck of a bottle with the cylinder 1 depending downwardly in the bottle. The other end of the cylinder is in the form of a head 4 equipped with a bore to receive a tube 5 which projects upwardly in the cylinder 1 and has one end terminating in close proximity to the bottom of the bottle. The upper end of the tube has secured thereto a valve seat 6 mounted in a combined spray nozzle and piston 7. The combined spray nozzle and piston 7 is mounted for reciprocation in the cylinder 1, the latter having vent openings 8 between the interior thereof and the interior of the bottle. A ball check valve 9 operates in the combined piston and spray nozzle to engage with the seat 6. The valve seat 6 has a sliding fit with the combined spray nozzle and piston and interposed between one end of the latter and the seat is a coil spring 10 acting to restore said combined piston and spray nozzle to its uppermost position. Suitable securing means 11 is provided between the tube and the head 4 to prevent said tube and seat 6 from sliding with the combined piston and spray nozzle.

The combined piston and spray nozzle is in the form of a sleeve 12 having a sliding fit with the cylinder 1 as well as the valve seat 6 and has its outer end recessed to form a finger rest 13. A nozzle 14 is secured to the sleeve 12 and communicates with the interior thereof. A pin and slot connection 15 is provided between the sleeve 12 and the cylinder 1 and said sleeve has a shoulder 16 adapted to abut with the flanged end of the cylinder 1 when said combined piston and spray nozzle has been moved fully inwardly of the cylinder 1 so as to seal the contents of the bottle to the atmosphere. The combined spray nozzle and piston when in the latter-named position covers the openings 8.

In operation, the combined spray nozzle and piston 7 is reciprocated by placing of a finger in the finger groove 13. During an outward movement of the combined piston and spray nozle with respect to the cylinder 1, liquid of the bottle is drawn into the sleeve 12 by way of the tube 5, the ball valve 9 acting to prevent return of said liquid to the bottle so that on the inward movement of the combined piston and spray nozzle, the liquid trapped therein will be forced outwardly by way of the nozzle 14 in spray form.

Referring to my modified form of the invention, the mounting of the spray nozzle may be through a spider 17 which is secured to the tube 5 and engages the neck of the bottle and is held thereon by the cap 3. In this form of my invention the cylinder 1 is omitted and the combined spray nozzle and piston 7 is slidably supported by the cap 3 and reciprocates relative to the valve seat 6 and tube 5.

The port in the spray nozzle 14 is comparatively small so that during the outward movement of the sleeve 12, sufficient suction will be developed therein to lift the liquid into said sleeve 12 from the bottle.

Having described the invention, I claim:

1. A spray nozzle comprising a cylinder, a cap secured to said cylinder and mounted to a bottle with the cylinder extending into the latter, a sleeve reciprocally mounted in said cylinder, a nozzle carried by said sleeve, a tube supported by the cylinder and extending into the sleeve and into the contents of the bottle, a valve seat secured to said tube and frictionally engaging said sleeve, a ball valve engaging said seat, a spring

interposed between the sleeve and the seat, a finger rest formed on said sleeve, a shoulder formed on said sleeve to abut with the cylinder, and a securing means for holding the shoulder in abutting engagement with the cylinder.

2. A spray nozzle comprising a cylinder, a cap secured on said cylinder and mounted on a bottle with the cylinder extending into the latter, a sleeve reciprocally mounted in said cylinder, a nozzle carried by said sleeve, a tube supported by the cylinder and extending into the sleeve and into the contents of the bottle, a valve seat secured to said tube and frictionally engaging said sleeve, a ball valve engaging said seat, a spring interposed between the sleeve and the seat, a finger rest formed on said sleeve, a shoulder formed on said sleeve to abut with the cylinder, and a pin secured to the cylinder, said sleeve having a slot to receive the pin for securing the shoulder against the cylinder.

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